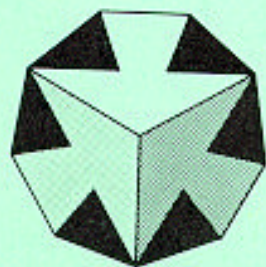


NATIONAL TRAINING CENTER



COMMANDERS MEMORANDUM

NTC OBSERVATIONS

November 1985

TABLE OF CONTENTS

[Memorandum](#)

[Individual and Small Unit Execution](#)

[Intelligence Preparation of the Battlefield \(IPB\)](#)

[Reconnaissance and Counterreconnaissance](#)

[Role of Infantry](#)

[Fire Support](#)

[Smoke](#)

[Defensive Chemical Measures](#)

[Attack Helicopters/Joint Air Attack Teams \(JAAT\)](#)

[Attack Techniques](#)

[Tank Positioning](#)

[Defense Techniques](#)

[Mobility, Countermobility and Survivability](#)

[Combat Service Support](#)

[Command and Control](#)

DEPARTMENT OF THE ARMY
Headquarters, National Training Center And Fort Irwin
Fort Irwin, California 92310-5000

AFZJ-CG

20 November 1985

MEMORANDUM FOR LTG Riscassi

SUBJECT: NTC Observations

1. As Commander of the National Training Center for the last year and a half, I have had the rare opportunity to observe the performance of a large number of units in what is arguably the world's most realistic combat training environment. Being very aware that perspectives change and memories fade as subsequent assignments come and go, the attached paper was written primarily for my own benefit. It is not a comprehensive discussion of tactical issues, but rather a collection of selected impressions and opinions recorded for future reference. Since there are very few absolutes in this business, the intent was simply to express my best judgement at this particular point in time concerning a relatively large number of complex topics. Comments relate primarily to battalion operations, since that is the level of primary focus at the National Training Center and although we have some experience with modernized units, observations are predominantly of M60/M113 organizations.

2. Having just reread the paper in its entirety, there is clearly a dominant emphasis on the requirement for in-depth planning and attention to tactical details. While battles are invariably decentralized and very little ever happens exactly as planned, a unit's ability to respond effectively to the unexpected and to use individual initiative to exploit opportunities is largely determined by how much hard work is done up front. Flexibility is a function of preparation.

3. Although written in the first person, many of the insights expressed are those of a very talented group of senior NTC officers; e.g., COL Wes Clark, COL Larry Word, LTC Tom Graney, LTC Doug Campbell, LTC Mac Johnson, and LTC Glen Skirvin, plus LTC Jim Crowley from CATA at Ft Leavenworth. The above notwithstanding, I alone am accountable for the overall product. Views presented are believed to be consistent with current doctrine in almost all cases; however, no staffing was done outside of Ft. Irwin.

Encl

E.S. Leland, Jr.
Brigadier General, USA
Commanding

CF:

LTG Palastra, CG, I Corps & Ft Lewis
LTG Jenes, DCG, FORSCOM
LTG Lindsay, CG, XVIII Abn Corp
LTG Saint, CG, III Corps & Ft Hood

INDIVIDUAL AND SMALL UNIT EXECUTION

Battles can be lost at any level in the chain of command, but are only won by companies, platoons, squads, and crews. Soldiers and junior leaders at critical but mostly unpredictable locations win or lose battles for the battalion task force. Hence, skillful execution of fundamental individual and small unit tasks is a prerequisite for mission accomplishment.

Small unit actions are not only the most important but also the most difficult. It is at that level that individuals and weapons are most affected by the uniqueness of terrain. As a result, there are very few absolute rules -- only principles which are easy to understand on the blackboard but tough to execute under the infinite variety of possible METT-T conditions. A great deal of practice is required.

Dispersion and pace are typically such that senior leader supervision and detailed control of even a minor portion of the critical action is simply not possible. Therefore, the small unit challenge is as much a matter of leadership and discipline as it is training. A unit that does well only those things the boss checks will have great difficulty. Our soldiers will do far more than we have any right to ask if they understand the importance of their actions, know that their leaders are competent and that they care about them as individuals, and believe that there is something special about their unit.

INTELLIGENCE PREPARATION OF THE BATTLEFIELD (IPB)

The common sense IPB process is the biggest doctrinal improvement in my 24 years of service. While basically the same concepts have been prescribed for many years, they are now far better organized and more logically presented. When properly done, IPB drives tactical planning.

The S-2 is a key player, but it is a mistake to think of IPB as strictly an S-2 function. Decision making and IPB are part of the same whole. IPB must be done by the commander and his entire staff. As an example, the ADA Officer, Air Battle Captain, and ALO should help determine enemy air attack alternatives.

IPB drives reconnaissance and surveillance planning and execution. Templates must be confirmed by physical reconnaissance. Key named and targeted areas of interest must be monitored by dedicated and, if possible, redundant assets.

In the OPORD, priority intelligence requirements and the decision support template need to be explained in detail so that reporting requirements are understood by all leaders and staff. Communicating IPB during the orders process helps focus task force leaders on the commander's intent. Use of large scale sketches to show expected enemy dispositions and actions is an effective technique.

IPB never stops. Templates must be updated throughout operational planning and execution with significant changes rapidly passed to the commander. All possible sources should be exploited. Besides organic assets and requests to brigade, direct queries to adjacent and forward elements, ground and airborne FACs, and Army aviation assets in the area can produce useful and timely information.

IPB is equally important in both offensive and defensive operations. More school-developed offensive IPB models are needed in doctrinal publications.

RECONNAISSANCE AND COUNTERRECONNAISSANCE

The importance of reconnaissance cannot be overemphasized. There is typically a battle which precedes the battle -- a confrontation of opposing reconnaissance units -- and the winner of that preliminary battle is most often the victor in the main event.

For a deliberate attack, just knowing that the enemy is on a particular hill is not sufficient. You must know how he has prepared the ground -- obstacles and fire sacks. You must know the locations of his weapons systems so that you can isolate and/or suppress the vast majority and gang up on just a few. For the present, the detailed intelligence needed at task force level will not come from sophisticated devices but from skilled scouts and infantrymen.

In the defense, you must deny the enemy the knowledge of your concept of the operation. It is important for counterreconnaissance to begin before initial occupation and to continue throughout the time and depth of the defense. The defender must both detect and kill enemy reconnaissance elements. This requires dedicated assets -- scouts, infantry, tanks, and TOWs. During daylight, helicopters can be very effective at locating reconnaissance elements hiding in the task force sector. Challenge and password procedures should be used by everyone, not just TOC guards. Protection of obstacles is of particular importance. They are always a prime target and must be guarded at night. First light sweeps should be made to clear the area and check the integrity of defensive preparations. OPSEC and deception are also important. Reverse slope positions, use of screening smoke, frequent repositioning of vehicles, and late occupation of positions are all useful techniques.

For both offense and defense, reconnaissance must be continuous over time and throughout the depth of the battle area. If the enemy is moving, we need to know. We must use the high ground for observation and deny its use to the enemy.

Reconnaissance and counterreconnaissance actions are most effective when controlled at battalion level, normally by the S-2 and FSO. Company patrols (except local security) should be on a single battalion net. The S-2 and commo officer must provide for continuous communications with patrols, to include liberal use of radio relays. A reporting schedule and negative reports are essential.

ROLE OF INFANTRY

The longer I serve, the more impressed I become with both the importance and the difficulty of basic infantry tasks; e.g., conduct attacks at night in rugged terrain; kill armor at close range; secure, construct, and breach obstacles; defend dismounted avenues of approach; conduct reconnaissance and surveillance; defeat enemy reconnaissance; and provide close-in protection for critical assets. Time and time again, a few skilled infantrymen are the difference between winning and losing a battalion/brigade level battle. They provide the detailed intelligence which permits accurate targeting and greatly enhances the odds of successful maneuver; they breach the pivotal obstacle and destroy the key weapon which unhinges the enemy's defense; they conduct the night attack which causes enemy armor to reposition, thereby facilitating its destruction by friendly tank and AT fire at first light.

Mounted infantry provides a responsive force which fights best dismounted. In the vicinity of the enemy, the AT risk in lightly armored vehicles frequently exceeds the risk of direct and indirect antipersonnel fires on the ground.

Attaining and sustaining the requisite dismounted infantry skills is a difficult training challenge in a heavy division -- a challenge which goes far beyond that of just individual soldier tasks. It encompasses leader understanding of the role of infantry in heavy force operations. Almost without exception, there are many more infantry missions to be performed than there are infantrymen available -- particularly in a modernized task force. While priorities will vary as a function of METT-T, there is seldom sufficient infantry to provide close-in protection for TOCs, trains, ADA, and tanks. Except in the most extreme situations, all of those elements must provide their own security employing camouflage, light and noise discipline, movement, deception, dismounted crewmen, illumination, and VT artillery, as appropriate.

Experience shows only a limited capability for infantry to block dismounted avenues of approach. There is typically a very wide sector, a requirement to deploy forces in depth, and a large number of potential enemy routes. Most avenues should be observed until the enemy is acquired and then blocked by fire and the maneuver of weapons. This is not to say that infantry cannot be used to deny an approach, but only that this capability is often limited in comparison to the total area to be defended.

Infantry can be highly effective against armor in both the offense and defense. Positioning TOWs and DRAGONS to the flanks and rear of enemy approaches/positions in terrain that cannot be traversed by tracked vehicles frequently achieves surprise and causes an unprepared reaction. In the offense, it takes away the defender's "keyhole" AT positions. In the defense, it dissipates his suppressive fires and forces time consuming clearance of rugged terrain. Given an effective man portable AT weapon, correctly positioned dismounted infantry does not need to close with the enemy to be a major factor on the modern battlefield.

Patrolling is both as difficult and as critically important in the environments where we are likely to employ armored forces as it is in close terrain.

Successful dismounted night attacks against an armored enemy are typified by secure movement and a high volume of armor killing fire. Effective movement requires exceptional navigational skills, avoidance of obvious avenues of approach, and traveling with the minimum force required to get the job done. The mission obviously does not get accomplished if you never find the objective, stumbling across ridge lines in moonlight invites indirect fire, and not much is achieved if you get to where you want to be and have no capacity to kill the enemy.

The conduct of air assaults to facilitate the passage of mounted formations through restrictive terrain is an effective yet frequently unexploited technique.

FIRE SUPPORT

Maneuver commanders must direct fire support in a very personal way and therefore require a comprehensive understanding of the capabilities, limitations, and ground effects of fire support systems. By definition, a commander's concept is both a scheme of maneuver and fires. The concept for fires needs to be expressed in terms every bit as specific as that for maneuver. Target value analysis -- the process of determining what to shoot -- is guided by the commander with advice from the FSO. FSOs must talk to commanders in terms of target effects, not numbers of rounds by type.

The fire support plan is far more than a target list or schedule of fires. It is an articulation of how supporting fires are to be employed with the other elements of combat power to accomplish the mission. The timing of maneuver and fires must be developed and then fully explained. "Priority of artillery fires to Team B; 4.2 mortar to Team C initially. See Target List" simply does not cut it.

Although execution is mostly decentralized, fire support planning needs to be more tightly controlled at task force level than I previously believed. Specific guidance from battalion concerning where, when, and what to shoot rather than an allocation of priorities to specific companies is often the most effective method of synchronizing fires with maneuver. The fire plan should originate at task force level and then be modified and expanded based upon company input. Given that there is never sufficient artillery to do all things, a centralized approach guards against the risk of firing a few rounds on a few particularly critical targets.

In the defense, priority of fires should be determined by where the enemy goes; i.e., we must keep track of the enemy and adjust to his actions.

The goal is a collection of preplanned targets that satisfies a high percentage of the requirements for indirect fire. Responsiveness is the obvious benefit. That goal notwithstanding, it is important to guard against the tendency to fire preplanned targets when the enemy is somewhere else. Adjustments from planned targets or grid missions must be used if that is what it takes to get the fire on the enemy.

A face to face meeting between brigade and task force FSOs and the DS Battalion S-3 and FDO, where the concepts of operations and intents of the various maneuver commanders are discussed, pays rich dividends.

The fire support execution matrix -- the linkage of targets to systems and the identification of specifically who is to shoot by phase of the battle -- is a very effective tool. Responsibility for each target to include identification on the ground, observation, execution, and adjustment as necessary is given to a specific unit; e.g., company team, attack helicopter company, or scout platoon. Sufficient redundancy is required to guard against obscuration and casualties.

Hitting targets requires a great deal of preparation which should not be underwhelmed. Commo between companies, FSOs, and FDCs needs to be thoroughly checked before the battle to include necessary corrective action. The locations of OPs, obstacles, and reference points require confirmation by resection or PADs to the maximum extent possible. Commanders, subordinate infantry and tank leaders, FOs, and others responsible for specific targets must be able to point them out on the ground. Trigger lines based upon projected enemy routes and movement rates must be clearly identified.

There is a tendency for too much artillery talent to be too close to the guns. The complicated jobs requiring experienced judgement are the ones closest to where the rounds land.

While FSOs and FOs play a big role, the effective integration of fire is a command responsibility and there clearly needs to be a lot of non-artillerymen calling for fire. All leaders must know the frequencies and how to make the system work.

TACFIRE tends to back up during battles and it is difficult to override the queuing sequence, in part because the TF FSO forward cannot monitor the fire nets. Non-TACFIRE nets can also become jammed with the stronger stations overriding. In either case, the likely consequence is that fires will not be massed on the highest priority targets. Disciplining fire nets is obviously important. In addition, the establishment of a voice fire coordination net for the task force is recommended. On this net, the TF FSO passes instructions to company FSOs, his FSE, and the mortar FDC, and he receives feedback on what is happening on fire direction nets. Unless the TF FSO has a net to receive information and pass instructions, he becomes just another FO.

Mortars can make a significant contribution, but are difficult to employ in a fast moving mech-armor environment due to their limited range. The mortar platoon leader must keep track of the battle, participate in decisions concerning his positioning, and sell his product. The TF FSO also has obvious responsibilities in those areas. Considering the impact that range has on the capability to both mass fires and support multiple companies, mortar employment should be kept as uncomplicated as possible. Often it helps to assign specific preplanned targets to the mortars. Also, attaching sections to lead companies can work well in offensive operations. Tight company commander control is recommended; e.g., "Stay one terrain feature behind; move when I move; shoot the targets I give you; and use direct lay whenever possible."

Artillery/mortar illumination should be planned for all night operations, even when the primary concept calls for no illumination. Plans need to delineate specific conditions which will trigger the use of illumination and who will make the decision. Even when gunners can acquire targets with night sights, leaders often need illumination to facilitate command and control and fire distribution. It is far more difficult than I realized to achieve effective illumination over the areas covered by modern direct fire weapons. Illumination assumptions upon which the overall concept of operations is based should be very conservative.

The effective integration of CAS and indirect fires requires Airspace Coordination Areas (ACAs). The simplest solution -- stopping all indirect fires while aircraft are in the area -- is no solution. Aircraft almost always need the suppressive effects of the artillery in order to survive, and maneuver commanders cannot abide an overall reduction in fires. Prior planning and close coordination between the FSO and FAC are key. Dividing the target area into either east and west or north and south halves is a practical approach. Whatever scheme is decided upon, it needs to be simple, and instructions to the aircraft must reference terrain features, not grids; e.g., stay north of the ridge and east of the road. ACAs can have such a significant impact that their implementation and removal should be approved by the TF commander on a case-by-case basis.

There is a dilemma inherent in having only one ground FAC with a battalion task force. He frequently needs to be in two places at one time -- with the commander and FSO coordinating fire support and maneuver and at a vantage point directing aircraft to their target. Sometimes these two functions can be performed at the same location but often they cannot. Two FACs are needed, and FSOs, company officers, and scouts must know how to give final approach instructions to A-10 pilots.

SMOKE

Smoke is a far more significant battlefield factor than I used to believe. It simply must be a major planning consideration in terms of both friendly employment and reaction to enemy use. An antitank position that seems very attractive in the middle of a sunny afternoon may not be very desirable when the attack comes in dense smoke early the next morning. If that weapon has not rehearsed movement to prepared alternate positions, it will likely be irrelevant to the outcome of the battle.

The effectiveness of smoke varies markedly with weather. During the periods of temperature inversion which often follow BMNT, it is possible to rapidly cover a very large area with dense smoke. Conversely, smoke rises so fast in the middle of a hot summer day that even the use of a great deal of generating capacity will have only a marginal impact. Also, a wind blowing generally in the direction of the enemy can be a great assist.

There is an obvious similarity in the impact of smoke and fog on the battlefield, and intensive training is required to deal with both.

Offensive operations in smoke require tighter formations, slower speeds, and easily recognized routes.

Defensive operations in smoke require prepared and rehearsed alternate positions and OPs that are generally much closer to the high speed avenues of approach, increased patrolling along obstacles to preclude breaching, and use of attack helicopters to find and exploit windows in the smoke. Although smoke does provide protection, it can turn on an attacker. If it blows away or when an open area is encountered, the attacker is suddenly exposed. A massed formation silhouetted against smoke is a great target. The attacker's need for closed formations, slower speeds, and routes which facilitate navigation makes IBP easier and results in vulnerability to counterattacks. Surveillance which tracks enemy movement and rehearsed counterattack plans are vital.

Jeep transported smoke is vulnerable, but not to a degree that it cannot be successfully employed. Use of wadis and other defilade, movement, and screening with smoke pots prior to start up all reduce vulnerability. Generators can run for an hour before refueling. Hence, it is not necessary for operators to remain in the area.

Smoke at night causes great confusion. Employment on the enemy as he is moving to attack positions in darkness can be very disruptive.

Smoke is a useful deception measure; it almost always draws attention and reaction.

Effective employment of the smoke generating capability of tanks requires a considerable amount of control and judgement. It is important to avoid premature use which gives away positions that otherwise would not have been seen and to be sure that the smoke ends up between the enemy and the vehicle. Smoke behind vehicles only makes them better targets.

The timing and placement of smoke to produce the desired result requires knowledge and experience. It is more of an art form than a mechanical process. A plan which integrates artillery and mortar delivered smoke, smoke pots, and smoke generators must be developed with a knowledge of the peculiarities of each. Smoke is fickle -- pots 100 meters apart can send smoke in different directions. The initial plan will often require adjustment due to unexpected effects of wind, inversion, and slope. We must have personnel with the requisite skills, and they must begin smoke operations early enough to achieve sufficient buildup and make adjustments.

DEFENSIVE CHEMICAL MEASURES

Formal NBC reports should not be transmitted on battalion and company command nets due to their disruptive impact. The preferred procedure is for platoons and companies to send initial spot reports on the command net, followed by NBC reports on the admin/log net. Normally, the Co XO or NBC NCO makes the formal report. The TOC must temporarily switch a radio to admin/log or use one of the XO's radios if they have been remoted into the TOC.

MOPP posture decisions, to include when to unmask, must be made at battalion -- the first level with the staff to make a risk assessment. Just because the M-256 kit shows clear in a company area does not mean it is safe to begin unmasking.

The company NBC NCO must be forward with either the commander, XO, or FSO. He cannot perform his duties from the combat or field trains.

As best as can be determined in a training environment, our chemical defense equipment works well when used by units with discipline, knowledge, and motivation. The addition of NBC officers and NCOs at battalion and company levels has helped. A systematic rather than a decentralized piecemeal integration of equipment is key. As an example, the company must plan the placement of its M-8 chemical alarms to provide coverage for alternate and supplementary as well as primary positions. Also, repositioning must occur as weather conditions change.

While effective operations in MOPP require intensive training in both combat and support tasks, units can perform far better than I previously imagined. The amount of CS used at NTC is such that most organizations adopt the chemical suit as their duty uniform, upgrading with mask, gloves, and boots as the situation dictates. Yet, even in the middle of the summer with temperatures well in excess of 110 degrees F, defenses are successful, obstacles are breached, objectives are taken, and weapons are fired accurately. MOPP gear obviously degrades performance, but it is not a show stopper for well trained units.

Getting NBC warnings to elements not organic or attached to companies requires the use of all battalion nets, to include admin/log and mortar FDC. Each element in the task force area must monitor at least one battalion net, regardless of the support or command relationship.

ATTACK HELICOPTERS/ JOINT AIR ATTACK TEAMS (JAAT)

Both Army and Air Force air assets possess significant combat power potential, but must be employed against enemy formations at fleeting points of vulnerability. Since there is a delay between time of request and arrival, synchronized employment is both critical and difficult to effect. Prior planning and IPB determinations are crucial.

Initial coordination and packaging of air assets should normally be done at brigade, with final control coordinated closely between the Air Battle Captain and the task force in whose sector they are going to be employed. When in a task force sector, activities at the point of attack must be conducted in conjunction with the directions of the TF commander since he is responsible for the overall synchronization of the battle in that area.

Experience indicates that the best coordinated JAATs are commanded by the Air Battle Captain, with an AO and FAC riding in his aircraft.

Effective employment of attack helicopters in conjunction with ground forces requires detailed planning and coordination down to task force level. To retain flexibility, planning needs to be accomplished in as many likely areas of employment as possible. While much can be accomplished over the radio as the battle is raging, the odds of success are far greater given planning and detailed face-to-face coordination prior to the battle. Coordination should include task force graphic control measures, likely aircraft battle positions and approach routes, Airspace Coordination Areas, plans for suppression of enemy air defense, communications to include anti-jamming contingencies, locations of chemical contamination, and of most importance -- provisions for real time intelligence. We can potentially lose an unacceptable number of aircraft to enemy small arms, tank, and AT fire by flying nap of the earth through valleys occupied by the enemy. Attack aviation needs locations of enemy platoons and companies "now" rather than a fix on battalions and regiments an hour ago. The required level of detail and timeliness can only be provided by units in contact.

The efficient operation and careful positioning of Forward Arming and Refueling Points (FARPs) are critical to attack helicopter mass.

The altitude dilemma -- attack helicopters above the skyline are quickly detected, even at stand-off ranges; yet, firing positions too close to the ground sometimes have dust signatures which can also be quickly spotted. Use of backdrop can provide an escape from this dilemma.

An attack helicopter's rate of maneuver is far less than the aircraft's potential speed. The time required to get an aircraft into position to engage the enemy is a function of IPB, reconned and rehearsed routes, knowledge of enemy locations, and the depth of prior coordination between the ground commander and Air Battle Captain.

While flank engagements are normally preferred, sometimes there are advantages to the frontal attack of a column formation. Effective fire from the front can cause the enemy to deploy -- an action which takes time to accomplish and reduces his subsequent rate of movement. Also, the nature of a column formation is such that weapons can quickly place fire on attacking helicopters to the flanks.

ATTACK TECHNIQUES

The key to defeating a Soviet defense built around AT weapons is to locate those weapons and then to either destroy or in some way make them irrelevant to our mission.

Since the critical phase of a deliberate attack typically occurs in the vicinity of the objective, planning should commence with actions on the objective and work backwards through crossing the LD and movement from the assembly area. Care must be taken not to devote so much attention to organizing the movement that the planning required to defeat the enemy on the objective does not receive sufficient emphasis. Specific terrain objectives, along with directions of attack, axes, and/or zones of action must be assigned to assault elements. Target reference points, phase lines, and other control measures are required to coordinate fires with maneuver. In other words, detailed planning helps. Do not assume that things will sort themselves out on the objective.

Effective reconnaissance is the key to detailed planning, but in-depth planning must normally begin long before much of the reconnaissance is accomplished. Plans are then refined as more is learned about the enemy. Also, a "review the bidding" session a few hours before LD time can be very beneficial. Commanders and staff are updated on intelligence that was not available when the OPORD was briefed, modifications to the plan are explained, and final coordination is effected.

The concentration of combat power against a small fraction of the enemy is a prerequisite for success, and the commander's control of the pace of the attack is a significant determining factor. A creeping attack provides the defender an opportunity to reposition, reinforce, and mass fires. An overly hasty attack risks loss of mass, fire support, and command and control; i.e., a piecemeal attack. In our experience, moving too fast for the situation is by far the more common error.

Avoid obvious killing zones. A vehicle that moves within 100 meters of a dead vehicle may be in the sight picture of the killing AT weapon. Do not commit forces through a group of recently destroyed vehicles unless you are reasonably certain that the killing systems have been neutralized.

Direct fire overwatch weapons play an important and sometimes dominant role. They provide the target acquisition, suppression, and destruction which can make an attack successful. It is sometimes prudent to overwatch with the majority of the force -- at least initially. The selection of positions and orientations can vary greatly depending on intent. Hence, the specific intent of the overwatch must be clearly specified; e.g., cover the maneuver element's movement to the objective, support the assault onto the objective, or fix a portion of the enemy to prevent repositioning. In all cases, actions between the overwatch and maneuver forces must be closely coordinated. The best procedure is face-to-face coordination on a vantage point overlooking the objective.

Overwatch can also be difficult mission. For forces in hasty positions to defeat a defender in prepared positions requires careful planning, preparation, and massed fires. Ideally, occupation should be preceded by reconnaissance to select and mark firing positions, routes, and sectors of fire. Reconnaissance can be done by leaders before battle or by TCs and loaders just prior to occupation. Success in overwatch generally requires an overwhelmingly superior volume of fire relative to the enemy force being engaged. Overwatch positions should not be static. Leaders must continuously adjust positions based on friendly and enemy actions.

Modern night vision goggles, along with thermal and passive night sights, represent a great advance over our previous capability to see at night, but do not turn night into day. Simple plans, rehearsals, restrictive control measures, and marked routes remain fundamental to the success of a night attack. Said another way, a good daylight plan will probably not be successful at night.

When conducting a movement to contact, put only the scouts and a relatively small armor heavy element forward until you have developed the situation. The intent is to preclude inadvertent enemy contact from tying down a large portion of the force and limiting maneuver.

TANK POSITIONING

Correct positioning allows tanks and TOWs to both survive and kill. Surviving is key and is a function of two factors: (1) avoiding detection by the enemy; and (2) if detected, moving securely to a different firing position. "What can be seen can be hit, . . ." is not just a trite phrase.

A few suggested positioning principles and techniques are outlined in the following paragraphs. They all apply to tanks. Some are also applicable for ITVs.

- ◆ Use a full hide position if at all possible and stay in it until the enemy is in the area where you plan to kill him. A prone or dug-in observer forward gives a much smaller signature than a tank, even one that is in a good firing position.
- ◆ Have a backdrop and avoid anything that catches the eye. Hill tops are death traps. Likewise, if you position a tank in the vicinity of a large boulder or other prominent terrain feature, it will almost certainly be detected.
- ◆ Position to the flank of an enemy approach and behind frontal cover. It is far easier for an attacker to acquire and kill targets to his front than those to his flank or rear. Despite the fact that MILES does not accurately reflect the vulnerability variance in frontal and flank armor, most kills at the NTC are from the flank.
- ◆ Have covered routes into and out of firing positions. Experienced crews often put as much priority on covered routes as on the quality of firing positions. Weapons must move carefully. Hot rodding produces diesel and dust signatures.
- ◆ One of the most successful techniques is the "Window" or "Keyhole" position. Simply stated, the basis for this technique is to limit exposure by deliberately restricting a tank's sector of fire. The tank is exposed only to the targets at which it is firing. It then shifts to other firing positions as targets are destroyed.

- ◆ Valley floor/open field positions are often very successful. Tank platoons have taken out battalions using this technique. The position must be well constructed with at least one hull down firing location for each tank and a covered route to full defilade. Very little of the tank is exposed in the firing location and there is normally a wide sector of fire. Such positions allow grazing fire analogous to effective machine gun emplacement. They often achieve surprise and it is difficult for one enemy element to point the position out to another or to accurately adjust indirect fires. The technique is often used with obstacles in such a way that neither the obstacles nor the tanks can be seen until the enemy crests a hill. The biggest disadvantage is the absence of a covered route of withdrawal. However, it is frequently possible to achieve security by killing all of the enemy within range before moving.
- ◆ The guideline of 75 meters or more between primary and alternate tank positions is clearly correct. Dispersion is also needed between wingmen. The greater the separation, the less likely that both will be suppressed and that the detection of one will give the other away. Depth is also critical. Linear deployment almost always loses.
- ◆ Do not construct berms. More than 20 feet of dirt is needed to be effective against a modern APFSDS round -- clearly impractical. They also make it easier for the attacker to spot the position.

Like almost everything else on the battlefield, the number of rounds a specific tank should fire from a given fighting position is a function of METT-T. As a general rule, movement to cover before or immediately following detection is the best course of action. Enemy turrets traversing in your direction or a round impacting nearby are indicators that it is probably time to go. However, there are situations when it is best to stay and fight; i.e., there are lots of them and only a few of you; they are moving and you are in high quality positions; and they are headed in your direction. If you employ what is commonly known as the "rock and roll" technique of frequent moves in and out of firing positions, your volume of fire is likely to be insufficient to blunt the attack. Also, a bound back to the next terrain feature requires a significant mobility differential. Either your equipment has to be a lot faster or you must slow him down with something. The odds of survival are sometimes better if you stay in position and slug it out until you cause a break in the flow; i.e., kill whole bunches of them quickly. Obstacles which slow his rate of advance obviously lessen the dilemma.

DEFENSE TECHNIQUES

Since it is not possible to be strong everywhere across a wide format, a key to defeating an attacking regiment with a much smaller force is timely movement in response to enemy action. Piecemealing needs to be avoided in the defense as in the offense. To be successful, the defender must bring the vast majority of his combat power to bear, irrespective of the routes the enemy chooses. Threat offensive tactics are geared to isolate and penetrate a portion of the defense. These tactics are designed to defeat a defender to the front. The way the battle typically develops, the flanks and rear of attacking formations are uncovered to some extent. The defender should strive to get weapons on the flanks, thereby forcing the enemy to turn off his axis or better still -- to fight in two directions. To make this a practical and not just a theoretical advantage, the defender must know where the attacker is and is not, he must slow him down, he must plan and prepare for maneuver, and his units must be able to disengage from enemy fixing forces. The ability to maneuver is a function of effective preparation. Routes and battle positions must be identified, reconned, and marked. Movement and occupation must be rehearsed. Ideally, routes and unoccupied positions should be covered by observation to preclude meeting engagements enroute. Experience shows a requirement for up to three rehearsals with at least one at night -- in MOPP IV -- buttoned up.

Partial breakthroughs often occur even when the majority of the attacking regiment has been destroyed and the defending force remains a viable fighting organization. Forward battalions must reorganize their remaining forces quickly. Effective units must be reformed and resupplied and the defense adjusted to be ready for the next echelon. Other brigade and division elements should be used to track down and destroy the penetrating enemy. Combat support and combat service support activities certainly must be ready for immediate self-defense even if this means positioning that does not optimize the support function.

Threat leaders are vulnerable. They have set positions in formations and more antennas. They can be picked out and killed by good gunners who know where to look. Loss of leaders disrupts attacks.

Detailed defensive planning must be done on the ground. Planning off a map is too general, predictable, and targetable. Quality weapon and obstacle positions surprise the enemy from unexpected locations. Whenever possible, positions and routes in and out should be set in (not just checked later) by leaders looking at them from the locations where the enemy is to be engaged. Besides gaining a better perspective on the adequacy of defensive positions, movement along enemy approaches gives leaders a better sense of the enemy's alternatives.

Heavy direct fire attrition of the attacker seldom occurs at extended ranges. Threat tactics -- to include deployment drills, smoke, and supporting fires -- limit vulnerability, and early identification of the defender's positions provides increased opportunities for maneuver. Opening the battle at maximum ranges is desirable because it disrupts the attacker's timing. However, the defeat of the enemy almost invariably occurs at close range (less than 1500 meters) in a web of fire from quality positions. The decision as to when each specific weapon will open fire should, of course, be based upon a thorough METT-T analysis. But in our experience, it is frequently best to design the main defense with the intent of not shooting until the enemy can be hit with a high volume of fire from multiple directions. Selected weapons engage early, but they are located well away from primary positions. A barrier system which prevents the enemy from rapidly assaulting the principal killing systems is key to this overall concept.

MOBILITY, COUNTERMOBILITY AND SURVIVABILITY

During offensive operations, finding and neutralizing obstacles is a critical task which should be performed in advance of the attack. This requires detailed reconnaissance, distinctive breach marking schemes, and continuous security at the breach until the main body arrives. These locations must also be concealed from the enemy for as long as possible. Guides, colored smoke, and aircraft marking panels are three techniques used to orient forces.

Armored personnel carriers must carry a basic load of materials for individual and crew fighting positions. For an infantry squad it might include 500-1,000 empty sand bags, 12-16 4x4s in six foot lengths, and several 3x6 sections of 3/4" plywood. PSP, M113 floor boards, and other material can be used in place of plywood. Some mines and concertina must also be carried.

Engineer work time is precious in defensive preparations. In almost all cases, there are a few obvious locations for obstacles regardless of task force plans and priorities. Work should start on those while company and battalion plans are being developed. Also, standard packages of class IV material and mines should be sent forward to company positions as soon as a defensive mission is assigned, preferably by helicopter. More refined demands can be satisfied as the plans are finalized.

Obstacles serve not only to delay and disorganize the enemy, but also can provide shock effect by holding the enemy in an engagement area. Ideally, obstacles are in locations unanticipated by the enemy. All obstacles should be reinforced with mines and, of course, covered with direct and registered indirect fire. Generally, the farther forward the obstacle the more difficult it is to conceal, secure, and cover by fire. Subtle obstacles with easily discovered bypasses which lead vehicles into prepared "fire sacks" can be very effective.

Field artillery FASCAM must be carefully planned by the engineer, FSO, and S-3. Like any obstacle, it is best used at a chokepoint covered by effective indirect and AT fire. It can be argued that these principles apply even more strongly to FASCAM because the mines are surface laid and visible. An undisturbed enemy in column can work through this type of field quickly. FASCAM can be very effective for lane and gap closure and for blocking enemy breaches. Preplanning FASCAM is a must.

In most cases, survivability positions should be prioritized over AT ditches. While priority must always be based on the conditions of METT-T, lengthy ditches clearly take from the defender far more resources to construct and secure than they require of the attacker to breach. Regardless of general priorities, a specific schedule of work for each piece of earth moving equipment must be established; i.e., "First AT ditch at 475867, then 15 survivability positions for Team A, then . . ." Use of limited grade assets is so critical that battalions should give maintenance priority to that equipment. Appointing a "Dozer CINC" -- an individual who coordinates the movement, refueling, and other care of bulldozers -- is a good idea. The function is so important that it is not inappropriate to give that responsibility to the Command Sergeant Major or S-3 Air.

COMBAT SERVICE SUPPORT

Current task force level CSS doctrine generally works very well even under demanding circumstances and represents a significant improvement over previous procedures; e.g., the BMO coordinating all maintenance assets and actions; most classes of supply pushed forward in convoy under the control of a leader who can navigate (LOGPAC system); the HHC commander managing activities in the field trains; the combat trains and Unit Maintenance Collection Point (UMCP) in close proximity to each other but separate; and the S-1/S-4 well forward in the Admin/Log Center (ALC) coordinating CSS, keeping track of the battle, and serving as the alternate TOC.

Extended distances typically do not permit supporting elements to communicate directly with parent headquarters; consequently, the task force must provide and/or coordinate support for all units operating in its area of responsibility; e.g., engineers, ADA, GSR, and attached tanks or infantry. Emergency resupply and initial repair plus casualty and equipment evacuation are accomplished from the TF combat trains. Routine resupply and forward maintenance occur as a result of close coordination between the ALC, the HHC commander in the field trains, and the parent unit in the Brigade Support Area (BSA). Unit unique repair parts, mechanics, and supplies are integrated into the TF LOGPAC system.

Without effective steady state maintenance, units slowly but surely become combat ineffective during sustained operations. Dedicated blocks of time when much of the chain of command can concentrate on maintenance are not likely to be available. Cleaning, tightening, lubricating, checking, and routine part installation has to be done when and where the opportunities occur. Strong motivation and leadership are key. Vehicle crews simply must accomplish that which they have been trained to do without the benefit of close supervision. It is also necessary for supplies to be pushed forward; e.g., solvent, lubricants, and repair parts.

The detailed prioritization of specific CSS actions is a significant chain of command responsibility. Who gets the last available M113 engine -- a scout ITV, an infantry squad track, or the S-3's command post vehicle? Given insufficient POL to refuel the entire unit, do you top off the vehicle closest to the fuel truck, make a conscious decision to fill some and not others, or employ a specific rationing scheme; e.g., make sure that every tank has at least 100 gallons? When there is a known enemy armor threat in the rear area, how do you distribute your limited supply of Light Antitank Weapons? Experienced S-4s can frequently be overhead saying something like the following to inexperienced company commanders: "Do not tell me what you need. Tell me what you have. I will then tell you what you are going to get based upon the established priorities."

Experience confirms the need for forward maintenance. A dedicated effort is required to prevent the flow of a disproportionate number of maintenance actions back to the BSA. The risk is an unacceptable equipment availability rate and a BSA that cannot move due to the presence of more dead combat vehicles than there are recovery assets to transport them. Repair parts (to include most major assemblies), contact teams, and evacuation vehicles must be pushed forward. There are very few combat vehicle problems short of severe battle damage that cannot be fixed within six hours, given the availability of a skilled mechanic and the requisite repair parts. At least two company PLLs need to be at the Unit Maintenance Collection Point. The periodic rotation of PLLs between the UMCP and BSA is an effective replenishment technique.

Effective CSS requires thorough mission specific planning analogous to that required for successful tactical maneuver. Good SOPs are a vital starting point, but only that. For example, providing for treatment and evacuation of casualties, repair and recovery of damaged vehicles, and resupply of reconnaissance, ADA, and engineer elements working throughout the TF area entails a great degree of detailed planning which varies significantly as a function of METT-T.

Accurate and near real time loss reporting is essential both for prompt repair and for effective synchronization of available combat power. Timely information on overall status and an indication of significant losses are passed to the TOC on the command net with details provided to the ALC shortly thereafter on admin log. Frequent TOC-ALC cross validation of equipment and personnel status is obviously required.

Casualty treatment and evacuation is the weak link in battalion level CSS. Organic medical assets are insufficient and higher level support too slow to handle the surges in casualties likely to occur in intense mounted combat. Buddy aid, rapid movement to a forward aid station for life saving and stabilization, and early aerial evacuation are among concepts currently being developed at the Academy of Health Sciences which should produce needed doctrinal and organizational improvements in this area.

COMMAND AND CONTROL

There is nothing more important to success on the battlefield than effective command and control. Neither the best of equipment nor the most skilled soldiers are of much value if lost, uncoordinated, or not properly supported. The requirement to synchronize forces and firepower at the critical place and time is a fundamental tenet of AirLand Battle doctrine which is easy to understand yet extremely difficult to achieve in the fog of war. Commanding from a buttoned-up armored vehicle, in MOPP IV, with half the battlefield clouded by smoke, radio nets partially jammed, and some key leaders dead, lost, or not reporting, is not a trivial task. Basics can be gained through study and the use of abstract simulations, but proficiency at battalion level and below comes only with a great deal of practice dealing with the complex interrelationships between soldiers, equipment, weather, terrain, and an uncooperative opposing force.

Command and control must be a major consideration in the planning process and simplicity is a critically important factor. Well thought out, innovative, fully explained plans with likely contingencies and coordination measures discussed thoroughly with subordinates and staff are simple to execute. Simple looking plans without this level of detail are often not simple to execute.

The Second in Command (2IC) concept works well. A key is recognizing that the duties of company and battalion executive officers vary significantly with the phase of the operation -- preparing, conducting, recovering. During the actual conduct of the battle, the company XO is forward in a combat vehicle at a location separate from the commander, helping pass information to higher and adjacent units, and the battalion XO is supervising the critically important functions of the task force TOC. Both are then in a position to take command if needed. During the other phases, they facilitate CSS operations and planning from whatever locations that function can best be accomplished.

To effectively control forces, a commander must "SEE" the battle; i.e., he must know the positions, activities, and status of both enemy and friendly elements. Commanders see by positioning themselves to physically observe as much as possible without becoming personally involved in the battle; by demanding fast, accurate, concise reports; by having the TOC provide processed information, partially from nets the commander cannot monitor; and through the use of scouts, OPs, and patrols.

Negative reports and updated status are important. An indication that a company has reached a critical point without opposition or that there are no obstacles in the pass can be of equal or even greater significance than a contact report. "Bad news" tends to flood nets and prevent identification and exploitation of successes. Simple codes reflecting unit status can help keep the commander informed without clogging command nets.

A disciplined flow of information on the battalion command net is extremely important. Radios must operate properly with relays planned and established as necessary to ensure continuous communication. Frequent short transmissions should be the norm during intense segments of the battle. Ideally, TOCs are stationary at the critical times and in communication with brigade and all supporting and subordinate elements. Prior planning, careful positioning, and short moves during lulls are key. Information overload and underload must both be avoided. TOC reflex responses should include dropping to the internal net of an unanswering company, relaying from distant stations, checking compliance with the commander's instructions, and keeping a radio on old frequencies to police up stations that have not made the change. Cross talk between company commanders is often a prerequisite for success. Given an understanding of the intent of the battalion commander, company commanders must help each other and not depend totally on instructions and information from battalion.

The rapid distribution of well thought out and complete written orders is necessary to provide time for reconnaissance, changes in task organization, rehearsals, and all of the other planning/preparation activities needed to make a solid concept workable under the stress of combat. The liberal use of easily recognizable graphic control measures is recommended; e.g., phase lines, target reference points, trigger lines, engagement areas, numerous checkpoints, and clearly delineated objectives. While warning orders, frag orders, and face-to-face coordination are essential, the contention that there is no requirement for written orders at battalion level is simply not correct. Leaders should be provided a written order or, at a minimum, an annotated overlay in all but the most rapid reaction situations. It is neither an effective use of time nor sufficiently accurate for leaders to copy graphics or take down numerous coordinates and other details.

Providing each company commander sufficient copies of the battalion graphics so that they can be given to key subordinates helps communicate the higher commander's intent. Mimeograph machines are obviously useful. In addition, some units employ minicomputers with printers. Preprogrammed orders permit a junior staff officer to produce a 75% solution that can then be rapidly refined by the commander and full staff. Others have used desk side copiers and civilian AC generators to speed the mechanical process. An overall Army effort is needed to bring orders production/reproduction out of the jelly roll era.

Verbal frag orders must go to everyone in the orders group, not just selected company commanders. If circumstances are such that the TF commander discusses the order with something less than the total group, the S-3 and/or TOC should provide pertinent information and specific implementing instructions to the others; e.g., mortars, ADA, engineers, S-1/S-4.

Good navigation is fundamental to effective command and control. Ironically, the lower you are in the chain of command the more challenging the task. Navigation at battalion level and below is in fact very difficult. When it is not done well, conducting another class in map reading is rarely the solution. Actions required are thorough planning, as much reconnaissance as possible, vehicle and trail marking at night, liberal use of guides, and overall attention to detail. The ideal is for every vehicle in the unit to rehearse every possible move. When that is not possible, a leader reconnaissance or observation of the route from a vantage point are next best. The absolute minimum is a map reconnaissance to the point of significant memorization by every leader. The common sin is to underestimate the difficulty of the task, particularly at night. Example penalties include units that get lost on the way to the LD because the move that looked easy the previous afternoon was far more difficult an hour before first light; the OPOD that was scheduled for 1900 but not given until 0300 because the company commanders could not find the TOC; and the battalion destroyed in a piecemeal attack because commanders did not know where they were relative to the enemy or each other. As an aside, navigational aids on combat vehicles would provide an order-of-magnitude increase in realized combat power.

Limited visibility is the norm, not a special condition of battle, and must always be planned and prepared for; e.g., smoke, fog, dust.

Synchronization of combat power is often best accomplished when battalion directly controls and assigns tasks to attached and supporting units. Combat support elements should be attached to companies only when demanded by the conditions of METT-T. Under most conditions, ITVs (except those in the scout platoon) should be under the control of the senior AT leader; ADA weapons should be employed by the ADA platoon leader/battalion company commander except for STINGERS attached to selected companies during mobile operations -- a procedure recommended only because of the necessity to provide protected mobility; engineers should be attached only to lead maneuver companies during offensive operations and then only when there are known or suspected obstacles which can be dealt with by less than an engineer company. What is gained by centralizing combat support elements under their chain of command is better overall combat support, mass when it is needed, and less span of control for maneuver company commanders. In the best of circumstances, we ask a great deal of relatively inexperienced company commanders. Anything that can be done to simplify operations at company level is a plus.

The toughest issue is the infantry-armor mix. Pure companies should be the goal, but METT-T conditions will frequently dictate company teams -- particularly in the defense where battalions almost always have very large areas of responsibility. While "chairman of the board" leadership is never appropriate at battalion level, it clearly will not cut it when companies are pure. Inherent in that task organization is the assumption of total responsibility for the coordinated employment of infantry and armor by the battalion commander and S-3. Those two officers must be where they can control the action, normally from separate locations well forward.

Frequent changes in task organization should be avoided. The teamwork advantage is often far more important than a slightly more desirable mix of forces. Also, the timing of a change requires careful analysis. The significant advantage of a daylight linkup and the time required to receive the OPOD and to coordinate SOPs and LOGPACs must be considered.

The consequences of a lack of synchronization are so severe that OPSEC measures should not be permitted to degrade command and control at battalion level. Vehicles must be marked so that their specific identity (e.g., D23) can be determined from the rear and flanks at a considerable distance. Coding is fine so long as signs are large and at least partially nonsubdued. Under most circumstances, it is desirable to use combinations of colored chem lights to identify organizations down to platoon level at night. COMSEC requirements, which complicate command and control for marginal improvements in security, must be culled. Secure nets are wonderful. In addition to dramatically improved OPSEC, more information can be passed in less time.